REMARKS

At the outset, Applicants appreciate the thorough review and consideration of the subject application. The Final Office Action of April 5, 2004, has been received and its contents carefully noted. Claims 1-30 are currently pending. Reconsideration of the rejected claims in view of the following remarks is respectfully requested.

35 U.S.C. § 103 Rejection

Claims 1-30 were rejected under 35 U.S.C. § 103(a) for being unpatentable over U.S. Patent No. 6,201,813 issued to Klausmeier, *et al.* ("Klausmeier") in view of U.S. Patent No. 5,696,761 issued to Kos, *et al.* ("Kos"). This rejection is respectfully traversed.

To establish a *prima facie* case of obviousness under 35 U.S.C. § 103, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation in the references themselves to modify the reference or to combine reference teachings. Third, there must be a reasonable expectation of success for the modification or combination of references. Applicants respectfully submit that a *prima facie* case of obviousness has not been established.

Applicants note that the Examiner relies on Newton's dictionary repeatedly throughout the Office Action, however, this specific reference has not been provided to Applicants as required by chapter 700 of the MPEP and more specifically §707.05(a), which recites in part:

> Copies of cited references (except as noted below) are automatically furnished without charge to applicant together with the Office action in which they are cited.

But, in an attempt to resolve this matter prior to responding officially to the Office Action, Applicants made an attempt to contact the above-identified Examiner, to no avail. It is Applicants understanding, after investigation, that the Examiner is no longer employed at the U.S. Patent Office, and this application is being reassigned to another examiner. To date, however, this has not yet been effectuated and no Examiner is yet assigned to the examination of this application. Accordingly, it was not possible to obtain the citations, and it is thus not possible to response to specific points raised by the Examiner. Accordingly, Applicants submit that the Office Action is incomplete and should be withdrawn.

But, in an attempt to be more responsive to the office action, assuming that the citations with regard to the missing reference of Newton's dictionary are appropriate, Applicants remain of the opinion that the combination of references presented by the Examiner does not provide a prima facie case of obviousness as required under §103(a). Applicants, though, cannot respond directly to the Newton's dictionary reference, but after research remains of the opinion that this reference does not cure the deficiencies of the applied references.

Claims 1 recites, *inter alia,*

> assembling, in the ingress node, a plurality of consecutive segmented data frames belonging to the same flow of data transmitted from the sending unit to the ingress node into an assembled data frame corresponding to one of the long MTUs

Claim 18 recites, *inter alia,*

> assembling instrumentalities located in the ingress node to assemble a plurality of consecutive segmented data frames belonging to the same flow of data transmitted from the sending unit to the ingress node into an assembled data frame corresponding to one of the long MTUs.

None of the applied references teach or suggest at least these features.

The invention deals with the transmission of IP data frames between different nodes (not within a node) of a global network including backbone and access links and nodes. The network links are defined as being links between nodes and not links between internal functional blocks within a same node as described in Klausmeier. More specifically, the method for assembling IP packets according to the invention aggregates several IP packets of a same flow to build new IP packets in order to reach the maximum packet size authorized in IP network. In the invention, IP packets of variable size (up to the MTU supported by the backbone) are transferred on the backbone. The backbone is also accessed by IP packets of variable size but with other MTU limits. A network ingress node performs the assembling of IP data packets into IP data packets while a network egress node performs the de-assembly of the assembled IP data packets to recover the original IP data packets. In the present invention, the IP protocol is used on both sides of the ingress and egress nodes.

Initially, to further the Examiner's understanding, SONET (and SDH as well as all ITU G.7XX hierarchy) is a multiplexing standard using a method for assembling the traffic on channels/slots. This method is based on the Time Division Multiplexing (TDM) technique. The TDM is absolutely not a technique for assembling packets, but more a technique for transmitting

frames having a predefined structure. Within each frame, there are many slots. Frames have a fixed size. A low speed channel is allocated one or more slots with a high speed frame. The notion of packet does not exist since all the channels are in fact circuits. With the SONET standard, the size of the packets remains unchanged.

Klausmeier is directed towards a method of using asynchronous transfer mode (ATM) queues to segment and reassemble data frames such as IP frames, and describes a node or a digital switch with specific internal means for managing ATM cells. Klausmeier discloses IP packets segmented so that they may be transported in ATM cells, in which, individual cell headers and payload are required.

For example, in Klausmeier a 700-byte IP packet is segmented by AAL5 and transported by about 20 ATM cells. In contrast, the invention of claims 1 and 18 avoids such segmentation, for example and illustration purposes only, two 700-byte IP packets may be assembled into an assembled data frame of about 1500 bytes. More specifically, claims 1 and 18 recite, assembling data into "an assembled data frame corresponding to one of the long MTUs", which is like a super frame having a longer MTU. This is simply not taught by Klausmeier.

More specifically, Klausmeier addresses a method for using ATM (Asynchronous Transfer Mode) queues to segment and reassemble data frames such as IP frames. In fact Klausmeier describes a node (or a digital switch) with specific internal means (engines) for managing ATM cells. In Klausmeier different protocol are used, ATM cells on the network and IP packets within the node. Referring to Figure 2, Klausmeier clearly shows a method within a single node for assembling in input cells in packets (to recover the original structure of the

packets, for instance the original structure of the IP packets) and for segmenting in output the packets in cells. The ATM switching node, according to Klausmeier, includes a segmentation (output) engine and a reassembly (input) engine: both engines are located within the same node. The method according to Klausmeier performs within a node some protocol manipulation (like IP routing) for the imbedded packets (packets that were segmented into cells before being sent on the network and that were recovered within the node). In embodiments, the packets can be IP packets or packets belonging to another protocol. It is important to note that, from a network standpoint (and not switch standpoint), an ingress ATM node performs segmentation at the entry of the network since an ATM network can only accept ATM cells. The reassembly is performed by an egress node at the output of the ATM network.

Unlike the present invention, the assembling of cells according to Klausmeier is not processed in the ingress node but the input engine of each node. In the same way, the segmentation of packets according to Klausmeier is not processed in the egress node but in the output engine of each node. Also, Klausmeier does not disclose any invention at the network or backbone level. The teaching of Klausmeier is limited to a method for processing cells within a node and more particularly to a method for assembling cells in packets in input of this node and segmenting the packets in cells in output of this node. Also, unlike the present invention, Klausmeier does not teach nor suggest any specific change concerning this network.

Also, in Klausmeier, IP packets are just segmented and reassembled to be transported in ATM cells (MTU of 48 bytes to fit into ATM payload), but IP MTUs are never changed so there is absolutely no technical overlap between the system and method described in Klausmeier and

the system and method claimed by the present invention. Klausmeier segments IP packets to transport them into ATM cells. That is not the inventive concept of the claimed invention. In the invention, several IP packets are assembled into a kind of "superframe" called "assembled data frame". The assembled data frame (which is also an IP packet) has a longer MTU (defined by the IP protocol) supported by the backbone links but not necessarily by the access links (in case of low access speed). For example, 576 bytes for an access MTU and 1500 bytes for a backbone MTU are common MTU values. These values have nothing to do with the MTU of ATM (48 bytes for the payload).

Also, the AAL5 protocol described in Klausmeier allows the construction of longer containers to transport protocols such as IP. However, elements of data are transmitted in ATM cells of 53 bytes (header+ payload); while the present invention transports the "assembled data frame" as a single IP packet and not as segmented elements. It is easy to see that, compared to Klausmeier, the mechanism used in the present application is completely different.

In addition, the protocol used to transport imbedded packets is ATM for Klausmeier and IP for the present invention. For instance, according to Klausmeier, a 700 bytes IP packet is transported by about 20 ATM cells. This 700 bytes IP packet has to be segmented by AAL5. The present invention does not segment a single IP packet but handles and assembles at least two IP packets. So, in the present example, two 700 IP packets are assembled into a single "assembled data frame" of about 1500 bytes. Accordingly, in an ingress function, Klausmeier segments while the present application assembles. Inversely, in an egress function, Klausmeier assembles while the present application segments.

Kos, on the other hand, is directed towards a high speed time multiplexed switch (TMS) fabric unit for use in a telecommunications system having a relatively low speed TMS access link. Kos shows multiplexing short data frames from multiple data flows without assembly into a long data frame for switching purposes. The Examiner is of the opinion that Kos, however, discloses a

> method transmitting data frames from a sending unit … to a receiving unit in a data transmission network … comprising at least a backbone wherein the data are transmitted over high speed links … enabling long … MTU between the ingress node connected … to the sending unit by the first access link … and an egress node connected to the receiving node by a second link … with at least one of the first and second links being a low speed access link … requiring data frames to be segmented into short MTUs ….

However, it remains the opinion of Applicants that the Kos reference still does not cure the deficiencies of Klausmeier.

Applicants submit that Kos shows a method and apparatus for interfacing low-speed access links to a high-speed time multiplexed switch fabric where the high-speed time multiplexed switch fabric is for use in a telecommunications system having relatively low-speed access links. Like Klausmeier, Kos does not disclose any particular mechanism at the network or backbone level. Figure 2 of Kos, for example, represents a switching node or switching unit. All interfaces are accessed by fixed length packets based on time slots for telephony. In the input functional block "receive" of the switching fabric 25, data packets of fixed length are multiplexed by means of a MUX function 26. In a further step, multiplexed data packets are switched in 24 and demultiplexed in the output functional block "transmit" 30. Unlike the

present invention, thus, Kos does not describes a network ingress node or a network egress node.

In operation, each low-speed link carries a data flow having data packets, and a programmable multiplexer receives data packets from multiple such low-speed links. The multiplexer mixes the data packets into one signal, and transmits that signal of mixed data packets to a high speed switch fabric. The high speed switch fabric receives the multiplexed data packets, and directs particular data packets from each multiplexed signal to predetermined programmable demultiplexers. But this is much different than assembling short data frames of the same flow of data into long data frames for transmission in long MTUs having a protocol header and assembly headers for each data field as in claimed embodiments.

Now, since each multiplexer receives data packets from multiple low-speed links, the multiplexer <u>mixes multiple data flows</u> into a single multiplexed signal. In contrast, claimed embodiments assemble short data frames from the same flow of data into a long MTU. Additionally, because the high-speed switch fabric uses an external control signal received from a processor to control switching of the data packets, the multiplexed signals of Kos do not include headers of any type. In contrast, the long MTUs transmitted over the backbone include protocol headers, and an assembly header for each data field.

Applicants further submit, assuming arguendo, that the definitions provided by Newton's dictionary are accurate, these definitions still do not provide the necessary support for proving a prima facie case of obviousness. For example, the Examiner argues that multiplex is defined as "assembles a packet containing data on the source note." And, the Examiner further argues that

demultiplex is defined as "disassembles a packet containing data on the destination node." However, even with these definitions, none of the references still teach assembling short data frames from the same flow of data into a long MTU. Instead, as argued above, each multiplexer receives data packets from multiple low-speed links, which are then mixed into multiple data flows into a single multiplexed signal. This simply is not the same as the claimed invention.

Also, the Examiner is of the further opinion that that it is well known in the art to

> transferring of data from high speed to low speed involves the process of grouping data together at high speed and regrouping the data back to its low speed at the egress node…

Applicants maintain that this does not capture the claimed invention. The claimed invention requires assembling, in the ingress node, a plurality of consecutive segmented data frames belonging to the same flow of data transmitted from the sending unit to the ingress node into an assembled data frame corresponding to one of the long MTUs. This is not the same or equivalent as that argued by the Examiner.

Accordingly, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 103 as a *prima facie* case of obviousness has not been established.

CONCLUSION

In view of the foregoing remarks, Applicants submit that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 09-0457.

Respectfully submitted,

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